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PATENT SPECIFICATION

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(54) GOLF CLUB AND A SET OF SUCH CLUBS

(71) We, KABUSHIKI KAISHA ARIGA GOLF GROUP SEISAKUSHO, a Japanese Body Corporate of 383, Higashihongo, Kawaguchi-shi, Saitama-ken, Japan, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to golf clubs, and more specifically to the novel construction of golf clubs combining the advantages of conventional wood and iron clubs. The invention is also specifically directed to a set of such golf clubs.

As is well known, clubs used in the game of golf are broadly comprised of woods and irons. Both types of clubs have some characteristic features, which are not all to the advantage of golfers. Wood clubs, for example, with their wooden heads and small loft to the faces, enable the golfer to make longer shots than are ordinarily possible with irons. The shafts of woods have sufficient flexibility or suppleness to absorb the energy of impact of the club face against the ball, to such an extent that no great effort is required for gripping them. An additional advantage is that with woods, there is almost no likelihood of letting the head bite into the ground behind the ball thanks to the presence of the broad sole under the head. Woods, however, are disadvantageous in that their somewhat convex faces make it difficult to control the direction of the flight of the ball.

Iron clubs, on the other hand, with their various degrees of loft are usually used for shots of medium to short distance. It is easier to gauge the travel of the ball with irons because they are capable of imparting backspin to the ball, causing it to rise readily and come to rest without much roll. The direction of slots is also easier to control owing to the flat faces of irons. Since irons have no such broad sole as that of woods, however, the golfer is likely to have the clubhead caught in the ground on sclaffing. It is also a disadvantage that considerable gripping effort is necessary for proper shots with irons because their shafts are not built to absorb the energy of impact of the face against the ball.

It is therefore the principle object of this invention to provide a golf club combining the advantages of conventional wood and iron clubs, while eliminating their drawbacks without any substantial departure from the traditional and accepted form and make of golf clubs.

Another object of the invention is to provide a golf club which permits the player to make longer shots than he can with a conventional iron of like loft and which enables him to control the direction of his shots more easily than conventional woods.

A further object of the invention is to provide a golf club having a head portion of such construction that the player will not have it caught in the ground on sclaffing.

It is also an object of this invention to provide a set of golf clubs of the above-described character.

The invention provides a golf club comprising a shaft having a grip at one end and a head portion at the other end thereof, the head portion comprising a substantially flat sole plate so arranged relative to said shaft as to lie substantially flat against the ground when the club is grounded as herein specified; a face plate extending upwardly from a leading edge of said sole plate and slanted backwardly to provide loft, said face plate having a front face for striking; a neck extending upwardly from a heel end of said face plate and having a hosel in which said other end of said shaft is fitted; said sole plate and said face plate and said neck being integrally moulded of rigid material and the face plate being wholly disposed rearwardly of the foremost side of said shaft; and a wooden head fixedly mounted on the top of said sole plate and on the back of said face plate.

It should be understood that in this specification and in the claims appended thereto, such directional terms as "front" and "back", "forward" and "backward", etc., are used with reference to the

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direction in which the club is swung for striking a ball. Thus, for example, the face plate lies forward with respect to the wooden head.

The above and various other objects, features and advantages of this invention will become more clearly apparent that in the course of the following description of an illustrative embodiment, which is to be read in connection with the accompanying drawings wherein like reference numerals refer to like parts throughout the several views. In the drawings:—

Figure 1 is a perspectuve view, partly broken away, of the golf club constructed in accordance with the invention;

Figure 2 is an enlarged top plan view showing a head portion of the golf club of Figure 1 together with part of a shaft;

Figure 3 is an enlarged bottom plan view also showing the head portion of the golf club of Figure 1 together with part of the shaft; and

Figure 4 is a vertical sectional view taken along the line 4—4 on Figure 2.

With reference to the drawings and in particular to Figure 1 thereof the illustrated golf club embodying the principles of this invention broadly comprises a shaft 10 terminating at one end in a grip 12, and a head portion 14 at the other end of the shaft. The invention is specifically directed to the construction of the head portion 14 and its relationship to the shaft 10, so that the shaft itself, as well as the grip 12, can be of conventional make. It may be mentioned, however, that the shaft 10 can be of tubular construction and as supple as the shafts of conventional wood clubs to enable a golfer with relatively small grasping power to use the club to advantage.

As illustrated in greater detail in Figures 2, 3 and 4, the head portion 14 of the club comprises a sole plate 16, a face plate 18, a neck 20, and a head 22. It is one of the features of this invention that the sole plate 16, face plate 18 and neck 20 are integrally molded of such rigid material as metal or reinforced plastic. For the best results the material in use may be austenitic stainless steel of the class known as "18-8", containing 18 percent chromium and 8 percent nickel. The stainless steel of this class can be cast into the desired shape by the known lost-wax process to the best advantage.

The sole plate 16 is intended to lie substantially flat against the ground when the club is grounded, that is, when the club is rested or soled on the ground in the natural position for striking, as in addressing the ball (not shown). The sole plate 16 has a leading edge 24 as indicated in Figures 3 and 4.

The face plate 18 extends upwardly from the leading edge 24 of the sole plate 16 and, as best seen in Figure 4, is slanted backwardly with respect to the sole plate to provide desired loft. As may be apparent, the basic configuration of the golf club according to this invention is readily adaptable to provide a set of such clubs, which may be numbered consecutively or otherwise suitably named like the conventional irons and in which the loft is increased progressively so as to give progressively greater height and less distance to the flight of the ball.

The entire face plate 18, or at least its front face with which the ball is struck, is flattened like conventional irons. Formed on this flat front face of the face plate 18 are a plurality of parallel spaced slots or grooves 26 designed to cause the face to properly "catch" the ball at the time of impact. The face plate 18 has a heel end 28 and a toe end 30, as indicated in Figure 2.

The neck 20 extends upwardly from the heel end 28 of the face plate 18 and is so angled with respect to the sole plate 16 as to provide desired lie between the head portion 14 and the shaft 10 which is secured to the neck in a manner hereinafter described. It will be observed from a consideration of Figures 2 and 3 that the neck 20 is connected to the sole plate 16 via a relatively broad web 32, besides being connected directly to the face plate 18. Thus molded integral with the sole plate 16 and the face plate 18, the neck 20 serves to connect the head portion 14 to the shaft 10 with improved strength.

The neck 20 has a hosel or socket 34 formed therein which extends downwardly from its top and which, as best seen in Figure 4, terminates short of the face plate 18 for reasons hereinafter made apparent. The shaft 10 is fitted into this hosel 34 and is made fast both with a suitable adhesive and by a fast pin 36 extending crosswise through the neck and shaft.

According to a further feature of this invention, the leading edge 24 of the sole plate 16, or the bottom edge of the face plate 18, is disposed rearwardly of the foremost side of the shaft 10, as clearly shown in Figure 4. The neck 20 is therefore slightly crooked, and it is for this reason that the hosel 34 terminates short of the face plate 18.

In Figure 4, the character A denotes a notional line extending vertically downwardly from the foremost side of the shaft 10, and the character B another notional line passing the leading edge 24 of the sole plate 16 and drawn parallel to the line A. The distance X between the lines A and B is subject to change from club to club of the complete set to which this invention

is also directed, as mentioned previously, with the distance X decreasing with the increase in the loft of the clubs.

Tabulated below are the currently preferred values of the X for the clubs of the set, which are designated by consecutive numbers in conformity with the numbering of conventional irons. The table also gives, by way of example only, the loft angles of the respective clubs and the distances of shots for which the clubs may be used by the medium-hitting player.

Club Number	Loft, deg.	X, mm.	Shot Distance, m.
One	11	6.2	180—200
Two	14	4.9	170—190
Three	17	3.8	160—180
Four	20	2.9	150—170
Five	23	2.2	145—160
Six	26	1.7	135—150
Seven	29	1.4	125—145
Eight	32	1.1	115—135
Nine	35	0.8	108—125

With the face plate 18 thus arranged as a whole rearwardly of the foremost side of the shaft 10, the area of its front face can be made larger than the face area of a conventional wood club head of substantially the same shape and size and of the same loft, because the face plate 18 according to the invention is located closer to the thickest part of the head. This fact, combined with the above noted flatness of the face, makes it easier for the player to control the direction of his shot.

The head 22 is mounted on the top of the sole plate 16 and on the back of the face plate 18 and is dually made fast by gluing and screwing. In the illustrated embodiment four counter-sunk flathead screws 38 are employed, three of such screws passing through the sole plate 16 and the other one through the face plate 18.

The head 22 can be of substantially the same shape as the conventional wood club head, except for its flat surface contacting the face plate 18, and is made of wood. Bamboo plywood is currently believed to be the best material for the head. The presence of this head 22 behind the face plate 18 of metal or the like makes it possible for the golfer to make longer shots than he can with a conventional iron of like loft, or to make just as long shots with less exercise of power.

As clearly seen in Figures 3 and 4, a conventional weight adjustment 40 is arranged approximately centrally of the sole plate 16. The weight of the head portion 14 is thereby adjustable within limits to suit the individual requirements of players.

WHAT WE CLAIM IS:—

1. A golf club comprising a shaft having a grip at one end and a head portion at the other end thereof, the head portion comprising a substantially flat sole plate so arranged relative to said shaft as to lie substantially flat against the ground when the club is grounded as herein specified; a face plate extending upwardly from a leading edge of said sole plate and slanted backwardly to provide loft, said face plate having a front face for striking; a neck extending upwardly from a heel end of said face plate and having a hosel in which said other end of said shaft is fitted; said sole plate and said face plate and said neck being integrally moulded of rigid material and the face plate being wholly disposed rearwardly of the foremost side of said shaft; and a wooden head fixedly mounted on the top of said sole plate and on the back of said face plate.

2. A golf club as claimed in Claim 1, wherein said hosel terminates short of said face plate, and wherein said other end of said shaft is made fast in said hosel both with the use of an adhesive and by a pin extending crosswise through said neck and said shaft.

3. A golf club as claimed in Claim 1, including a web through which said neck is connected to said sole plate.

4. A golf club as claimed in Claim 1, wherein said sole plate and said face plate and said neck are integrally cast of stainless steel.

5. A golf club as claimed in Claim 1, wherein said head is made of bamboo plywood.

6. A set of golf clubs each having a shaft with a grip at one end and a head portion at the other end, each head portion comprising a substantially flat sole plate so arranged relative to the respective said shaft as to lie substantially flat against the ground when the respective club is grounded, as herein specified;—a face plate extending upwardly from a leading edge of said sole plate and slanted backwardly to provide a different angle of loft for each said club, said face plate having a front

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striking face; a neck extending upwardly from a heel end of said face plate and having a hosel in which said other end of the respective said shaft is fitted; said sole plate and said face plate and said neck being integrally moulded of rigid material and said face plate of each said club being wholly disposed rearwardly of the foremost side of the respective said shaft; and a wooden head fixedly mounted on the top of said sole plate and on the back of said face plate.

7. A set of golf clubs as claimed in Claim 6, wherein said leading edge of said sole plate recedes from the foremost side of said shaft a distance which decreases with the increase in the loft of said clubs.

8. A golf club substantially as hereinbefore described with reference to the accompanying drawings.

9. A set of golf clubs substantially as hereinbefore described with reference to the accompanying drawings and as particularised in the Table.

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1 SHEET

COMPLETE SPECIFICATION

Fig. 1

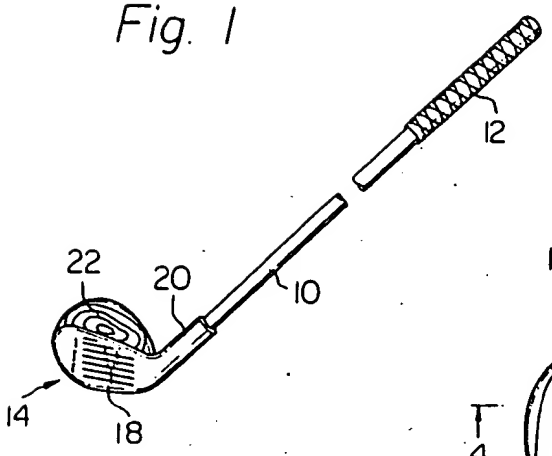


Fig. 2

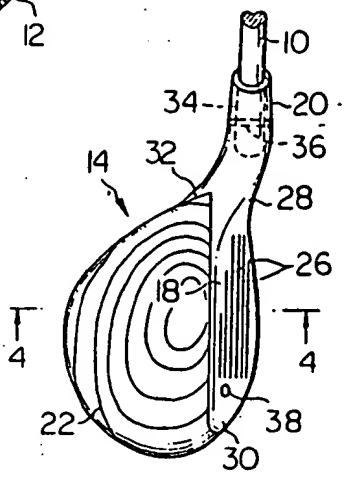


Fig. 3

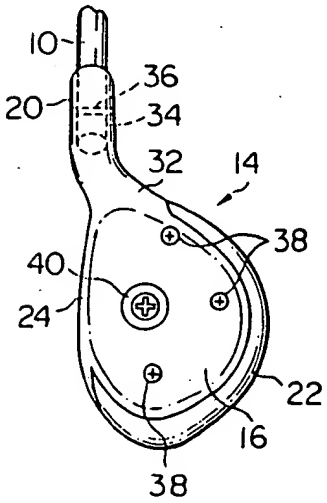
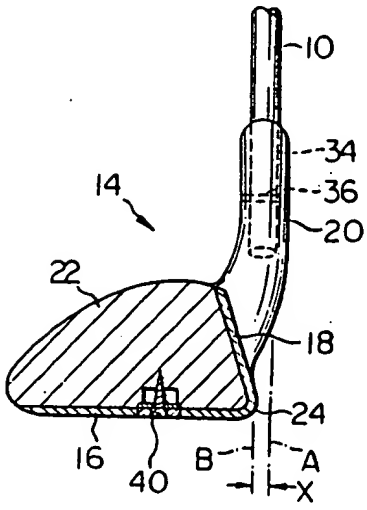


Fig. 4



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Golf club with wooden head - has integrally moulded sole and face plates attached to shaft and head

ARIGA GOLF GROUP SE 06.04.76-GB-013990

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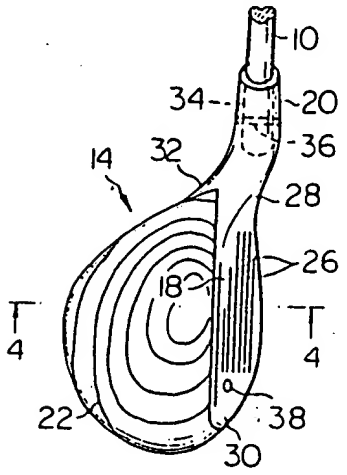
The club has a head portion (14) comprising a sole plate (16) which lies flat along the ground and a face plate (18).



The face plate extends upwards from the leading edge of the sole plate (16) and slants backwards to provide the loft angle.

A neck (20) extends upwards from the face plate (18) and has a socket (34) for receiving the end of a shaft (10). The whole of the face plate is positioned behind the front side of the shaft. The plates (16, 18) are integrally moulded from a rigid material pref. metal or plastics, and a wooden head (22) is fixed to them. The club combines advantages of both woods and irons.

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